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EXAMINER

FEELY, MICHAEL J

ART UNIT

PAPER NUMBER

1712

DATE MAILED: 05/21/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/050,908

Examiner

Michael J Feely

Applicant(s)

KHANDROS ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2002.
- 2a) ☐ This action is FINAL.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 5.

- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 29-45, 50, 56-60, and 62 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The above claims define (a) a vinyl siloxane ingredient and (b) a hydrosiloxane ingredient, in terms of viscosity measured in cps. Viscosity is a temperature dependent property; however, Applicant fails to disclose at which temperature, these claimed components possess their viscosity ranges.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-28, 46-49, 51-55, and 61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, improper Markush language is used to define "T". When using the language "is selected from the group consisting of", embodiments should be presented in list form using the word "and" – not the word "or".

5. Claims 33-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 33-36 recite the limitations "said transition metal", "said metal alloy", "said composite compound", and "said naturally occurring material" in claim 29. There is insufficient antecedent basis for this limitation in the claim. These claims should depend on claim 30.

Specification

6. The following is a quotation of the first paragraph of 35 USC §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of 37 CFR §1.71(a):

- (a) The specification must include a written description of the invention or discovery and of the manner and process of making and using the same, and is required to be in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which the invention or discovery appertains, or with which it is most nearly connected, to make and use the same.

The specification is objected to under 37 CFR §1.71 because: Applicant fails to disclose the temperature at which the viscosity of: (a) a vinyl siloxane ingredient and (b) a hydrosiloxane ingredient, are measured at. The disclosed viscosity ranges are meaningless without a temperature because viscosity is a temperature dependent property.

Claim Objections

7. Claims 1-28, 46-49, 51-55, and 61 use "(i)" to denote both an abrasive substrate layer and a compound of formula II. "(ii)" is used to denote both a tacky gel layer and a compound of formula III. Alternate notation should be used for these components.
8. Claim 48 uses "(a)" to denote both a first layer of material and a silicone resin of Formula I. "(b)" is used to denote both a second substrate layer and a crosslinking compound. Alternate notation should be used for these components.

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9. Claims 7 and 35 are objected to because of the following informalities: "silicone carbide, silicon nitride silicon oxide" should be replaced with --silicon carbide, silicon nitride, silicon oxide-- . Appropriate correction is required.
10. Claims 5-8 fail to clearly define the material used as the substrate layer. These claims expand specific members of the Markush group of claim 2; however, they fail to explicitly state that the substrate layer is comprised of a transition metal, metal alloy, composite compound, or naturally occurring material. Even with further embodiments listed, the scope of claims 5-8 remains inclusive of a transition metal, metal alloy, composite compound, and naturally occurring material.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

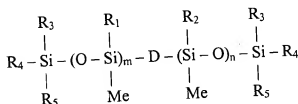
12. Claims 1, 2, 5-9, 18-30, 33, 37, 46, 51-54, and 56-59 rejected under 35 U.S.C. 102(b) as being anticipated by Lo (US Pat. No. 4,774,111).

In all of the above-mentioned claims, the instant invention includes the preamble language of, "A probe cleaning apparatus for cleaning the end portion of a probe used for testing a semiconductor wafer". A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15

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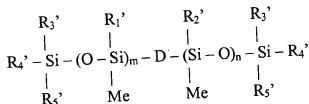
(CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In the instant case, the preamble merely recites the intended use of a structure, and the body of the claim is able to stand alone; therefore, the preamble language has not been accorded patentable weight.

13. Regarding claims 1, 2, 5, 9, 18-28, 46, and 51-54, Lo discloses (I) an article comprising: (i) an abrasive substrate layer (column 13, lines 1-5); and (ii) a tacky gel layer, wherein said tacky gel layer is in contact with the abrasive surface of the abrasive substrate (abstract), said tacky gel layer comprising: (a) a silicone base resin having the Formula I:



wherein: R_1 , R_2 , R_3 , R_4 , and R_5 are independently selected from: hydrogen, C_{1-6} alkyl, C_{1-6} haloalkyl, vinyl, or C_{1-6} acryloxyalkyl, and at least one of R_1 , R_2 , R_3 , R_4 , and R_5 is a vinyl group;

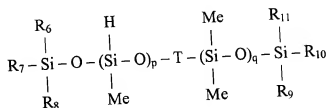
D is a divalent linkage selected from the group consisting of: $-O-$, $-S-$, $-(CH_2)_rCH_2-$, $-(CH_2)_rCH_2O-$, $-O(CH_2)_rCH_2-$, wherein r is an integer from 0-10; n and m are independently integers from 0 to 1000, and the sum of n and m is not less than about 10 (column 5, lines 22-52); and (b) a cross-linking compound selected from: (i) a compound having the Formula II:



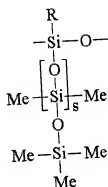
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wherein: R_1' , R_2' , R_3' , R_4' , R_5' , m' , and n' are independently selected from the groups defining R_1 , R_2 , R_3 , R_4 , R_5 , m , and n above with the proviso that vinyl is not present; or (ii) a compound having the Formula III:



wherein: R_6 , R_7 , R_8 , R_9 , R_{10} , and R_{11} are independently selected from: hydrogen, C_{1-20} alkyl, C_{1-20} haloalkyl, phenyl or C_{1-10} alkylphenyl; p and q are independently integers from 0 to 800; and T is selected from the group consisting of: a single bond, $-(CH_2)_nCH_2-$, $-(CH_2)_nCH_2O-$, and



wherein: t is an integer from 0-10; R is selected from: C_{1-20} alkyl, C_{1-20} haloalkyl, phenyl, or C_{1-10} alkyl phenyl; and s is an integer from 0 to 800 (column 6, line 41 through column 7, line 4); and (c) a catalyst (column 8, lines 51-59); further wherein: the chain length of the silicone base resin as defined by the sum of the values for m and n of Formula I, is always greater than the chain length of the cross-linking compound as defined by the sum of the values for m' and n' of Formula II, or the sum of the values for p , q , and s of Formula III (column 5, lines 14-21; column 6, lines 52-60); (2) wherein said abrasive substrate layer is comprised of a material selected

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from: a transition metal, metal alloy, composite compound, or naturally occurring material (column 12, lines 62-68); (5) wherein said transition metal is selected from the group consisting of copper, nickel, palladium, tungsten, rhenium, rhodium, and cobalt (column 12, lines 62-68); (9) wherein said abrasive substrate layer has surface abrasions obtained from one or more of: surface roughening, plating up, etching, stamping, cutting into the substrate surface, molder or sputtering (column 13, lines 1-5); (18) wherein for the silicone base resin of Formula I, the sum of m and n is about 10 to 1000 (column 5, lines 14-21); (19) wherein D is oxygen (column 5, lines 22-52); (20) wherein R³ is vinyl (column 5, lines 22-52); (21) wherein either of or both of R⁴ and R⁵ are methyl (column 5, lines 22-52); (22) wherein the cross-linking compound has the Formula I (column 6, line 41 through column 7, line 4); (23) wherein the silicone base resin has the Formula I, and R³ is vinyl (column 5, lines 22-52); (24) wherein for the silicone base resin of Formula I, either of, or both of R⁴ and R⁵ are methyl (column 5, lines 22-52); (25) wherein the silicone base resin has the Formula I, and D is oxygen (column 5, lines 22-52); (26) wherein the cross-linking compound has the Formula III, and the sum of p and q is from about 0 to 800 (column 6, line 41 through column 7, line 4); (27) wherein T is a single bond (column 6, line 41 through column 7, line 4); (28) wherein R⁶, R⁷, R⁸, R⁹, R¹⁰, and R¹¹ are methyl (column 6, line 41 through column 7, line 4); (46) wherein said abrasive substrate layer is homogeneous and comprises a single material having an abrasive surface (column 13, lines 1-5); (51) wherein said tacky gel layer comprises from about 2.0 to 5.0 wt% of a crosslinking compound (column 7, lines 21-29); (52) wherein said tacky gel layer comprises from about 2.0 to 3.0 wt% of a crosslinking compound (column 7, lines 21-29); (53) wherein the catalyst is a curing catalyst

(column 8, lines 51-59); and (54) wherein the said curing catalyst is a platinum containing catalyst (column 8, lines 51-59).

14. Regarding claims 6-8, even though further embodiments are listed (which are not disclosed in the reference), the scope of claims 6-8 remains inclusive of a transition metal, metal alloy, composite compound, and naturally occurring material; therefore, the claims are anticipated.

15. Regarding claims 29, 30, 33, 37, and 56-59, Lo discloses (29) an article comprising (i) and abrasive substrate layer (column 13, lines 1-5), and (ii) a tacky gel layer, wherein said tacky gel layer is in contact with the abrasive surface of the abrasive substrate (abstract); said tacky gel layer comprising (a) a vinyl siloxane containing silicone base resin having a viscosity of from about 2000 to 10,000 cps (at 25°C) (column 5, lines 14-64); and (b) a hydrosiloxane containing cross-linking compound having a viscosity of from about 2 to 1000, wherein the cross-linking compound does not contain a vinyl group (column 6, line 41 through column 7, line 4); and (c) a catalyst (column 8, lines 51-59); (30) wherein said abrasive substrate layer is comprised of a material selected from: a transition metal, metal alloy, composite compound, or naturally occurring material (column 12, lines 62-68); (33) wherein said transition metal is selected from the group consisting of: copper, nickel, palladium, tungsten, rhenium, rhodium, and cobalt (column 12, lines 62-68); (37) wherein said abrasive substrate has surface abrasions obtained by one or more of: surface roughening, plating up, etching, stamping, cutting into the substrate surface, molding or sputtering (column 13, lines 1-5); (56) wherein the tacky gel layer comprises from about 2.0 to 5.0 wt.% of a cross-linking compound (column 7, lines 21-29); (57) wherein said tacky gel layer comprises from about 2.0 to 3.0 wt.% of a cross-linking compound (column

7, lines 21-29); (58) wherein the catalyst is a curing catalyst (column 8, lines 51-59); and (59) wherein said curing catalyst is a platinum containing catalyst (column 8, lines 51-59).

Claim Rejections - 35 USC § 102/103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 49 and 50 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lo (US Pat. No. 4,774,111).

Regarding claims 49 and 50, Lo does not explicitly disclose that the tacky gel layer is self-healing. However, it has been found that a chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present – *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Therefore, if not explicitly taught in the reference, then the teachings would have been obvious to one of ordinary skill in the art at the time of the invention.

Allowable Subject Matter

18. Claims 3, 4, 10-17, 47, 48, 55, and 61 would be allowable if rewritten to overcome the objection (s) and rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

19. Claims 31, 32, 38-45, 60, and 62 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, first paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
20. Claims 34 and 36 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, first and second paragraphs, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
21. Claim 35 would be allowable if rewritten to overcome the objection(s) and rejection(s) under 35 U.S.C. 112, first and second paragraphs, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

22. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 3, 4, 31, and 32, Lo is the closest prior art; however, the reference fails to disclose the article of claim 1 or the article of claim 29, wherein an abrasive surface of said abrasive substrate layer comprises said material in the form of a powder, particle, granule or crystal. Lo only discloses the use of "smooth or rough" substrates, with no teaching or suggestion to use powders, particles, granules, or crystals.

Regarding claims 10, 11, 38, and 39, Lo is the closest prior art; however, the reference fails to disclose the article of claim 9 or the article of claim 37, further comprising alternating regions of tacky gel layer and an abrasive surface.

Regarding claims 12-17 and 40-45, Lo is the closest prior art; however, the reference fails to disclose the article of claim 2 or the article of claim 29, wherein the abrasive substrate layer has an abrasive surface comprising dendritic patterned abrasions. Lo teaches regular or irregular roughening patterns, with no teaching or suggestion to provide a dendritic pattern.

Regarding claims 47, 55, and 60, Lo is the closest prior art; however, the reference fails to disclose an additional protective substrate.

Regarding claim 48, Lo is the closest prior art; however, the reference fails to disclose a multi-layer heterogeneous abrasive substrate, as set forth in claim 48.

Regarding claims 61 and 62, Lo fails to include the article of claim 1 or the article of claim 29 in a kit with a probe card. Yamasaka (US Pat. No. 6,130,104) teach a similar kit; however, the reference fails to teach or suggest the articles set forth in claims 1 and 29.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Feely whose telephone number is 703-305-0268. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Michael J Feely
May 19, 2003



Robert Dawson
Supervisory Patent Examiner
Technology Center 1700